MEET YOUR DOT:™

An Introduction to the DOT™ Computer

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GUIDE TO DOT DOCUMENTATION

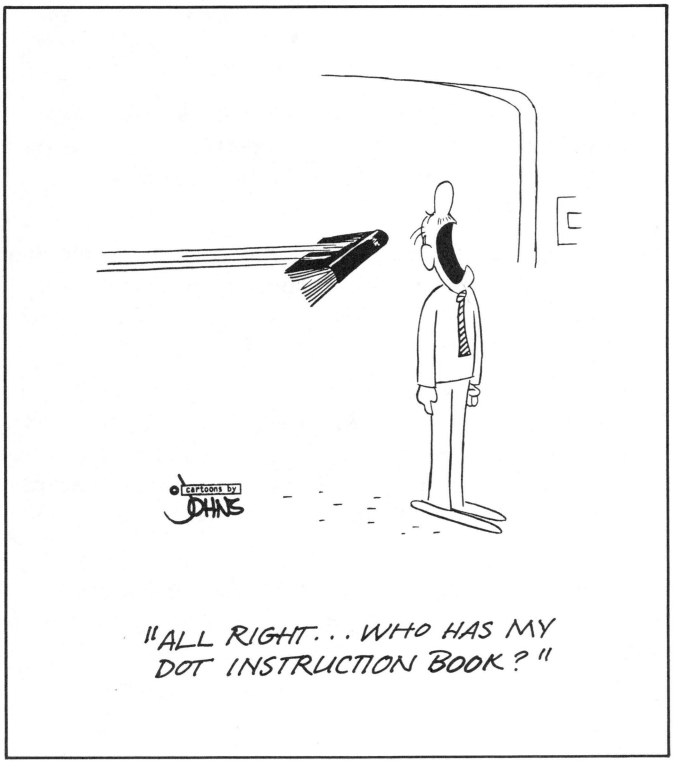
To learn how to perform specific tasks with your DOT,
read the following DOT documents in the order recommended.

TASK	MEET YOUR DOT™: An Introduction to the DOT Computer (0008-14612)	SOFTWARE DECISIONS: The DOT™ Guide to Software Selection (0008-14611)	YOUR DOT™ FILE CABINET: File Editing and Housekeeping on the DOT (0008-14615)	BUSINESS AND FUN WITH BASIC: A Sampler of BASIC Programs for the DOT™ (0008-14613)
Care for Equipment	1st			
Choose Software		1st		
Create Files	1st		2nd	
Edit Files	1st		2nd	
Manage Files	1st		2nd	
Run BASIC	1st			2nd
Run Programs	1st			2nd
Set Up the DOT	1st			
Start the DOT	1st		2nd	
Troubleshoot the DOT	1st			
Use the DOT as a Terminal	1st			

DOT

BEFORE YOU USE YOUR DOT. . .

Congratulations! You now own a DOT™ Portable Computer, ready to meet your information management needs. To learn step-by-step procedures for performing basic DOT operations, you're holding the right book.



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Meet Your DOT describes many ways to use your DOT. Covering a variety of basic operations, this book tells what you need to know to achieve specific goals. For more extensive information on details and options, **Meet Your DOT** provides references to other DOT manuals.

HOW TO USE THIS MANUAL

This manual includes six numbered sections and four appendices, including a glossary of terms so you can easily find definitions of unfamiliar words.

Section 1, "Getting Familiar with the DOT", shows you how to take care of your DOT. This section describes the major components of your DOT, including photographs to help you identify them.

Section 2, "Starting Up the System", describes how to start using your DOT. It also discusses preparing DOT diskettes for use.

Section 3, "DOT Files", explains how you can create electronic files to organize the information you need to store.

Section 4, "Using DOT BASIC", introduces you to a simple computer programming language, Microsoft® BASIC. In particular, you can follow step-by-step instructions to use your DOT as a calculator.

Section 5, "Using Other Programs", shows you how to load and run other programs on your DOT. These programs do not necessarily have to be provided with your DOT; check with your dealer for programs that are "DOT-compatible".

Section 6, "What If I Have a Problem?", is a handy reference section for you to use if you ever have difficulty with your DOT. The section provides troubleshooting procedures so you can try to determine the cause of the problem. It also provides a phone number to call if the troubleshooting procedures don't solve the problem.

The appendices provide reference information and advanced operating instructions to help you expand your use and understanding of the DOT.

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A FEW DOCUMENTATION CONVENTIONS

This manual uses several conventions for clarity.

1. In examples, **bold** type indicates information you enter.
2. When you need to press a specific key on the keyboard, the key name is shown in uppercase letters or both uppercase letters and numbers, enclosed in brackets. For example, to indicate that you must press the key labeled RETN, the manual says "press **[RETN]**".
3. Occasionally, the manual says to enter a "control sequence". To enter a control sequence, you hold down the key labeled CTRL while you press another character. In this manual, **[CTRL-C]** means to hold down the key labeled CTRL and then press the letter C.

Any other special conventions are noted in the text when you first need to learn about them.

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Section 1
GETTING FAMILIAR WITH THE DOT

Section 1
GETTING FAMILIAR WITH THE DOT

Meet your DOT. In just minutes, the DOT will be responding to your instructions. Before it can, you need to prepare it for operation by setting it up, turning it on, loading paper, and inserting the system diskette. This section explains these procedures and also introduces you to the DOT keyboard and to the care of diskettes.

SETTING UP THE DOT

The DOT Portable Computer weighs less than 28 pounds and is totally self-contained. The first step in setting up the DOT is to find a comfortable working space near a power outlet. To unpack the DOT, place the shipping container on a flat surface with the label facing up.

The DOT is packed in three separate pieces: the computer, the keyboard, and the power cord. Lift the DOT straight up out of the box. You will see the keyboard on top of the computer and the keyboard cord extending from the right rear of the keyboard. Place the keyboard in front of the computer so that the keyboard cord comes out from the back.

Next face the back of the DOT, and plug the keyboard cord into the socket labeled KEYBOARD on the rear panel of the DOT. Make sure the power switch (which is a red rocker switch on the back of the DOT) is in the 0 (zero or "off") position.

Finally, unwind the power cord. Plug the computer end of the power cord into the power connector on the right side of the rear panel. Plug the wall end into a power outlet. Your DOT is now set up and ready for you to use.

WHAT MAKES UP A DOT?

There are four main parts of your DOT Portable Computer that you need to know: the video display unit, the keyboard, the optional built-in printer, and the disk drive(s). Figure 1-1 shows a front view of the complete system.

Figure 1-1: Front View of the DOT Portable Computer

When you are familiar with these components, you can start making the DOT work for you.

Screen

The 5-inch by 9-inch screen located on the front of the DOT is called a video display unit (or a "VDU" in computer jargon). Resembling a small television screen, it displays "characters"—letters, numbers, symbols, and graphic images—that you enter from the keyboard. The screen can display up to 25 lines of information or graphics at one time and up to 132 characters on each line.

Keyboard

The keyboard of your DOT Portable Computer looks much like a typewriter keyboard, as shown in Figure 1-2.

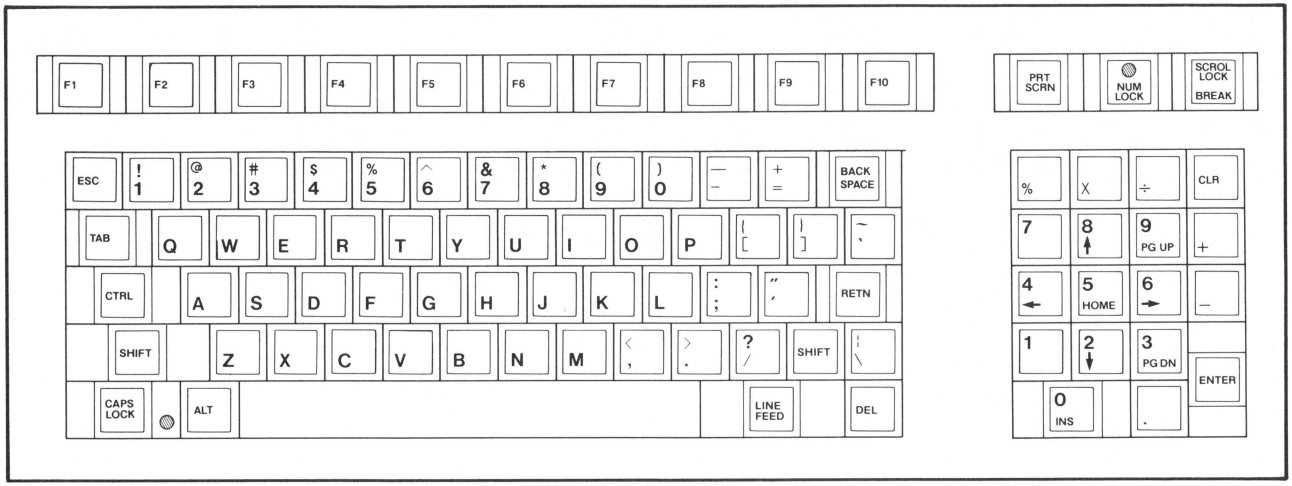


Figure 1-2: DOT Keyboard

Although it is like a standard typewriter keyboard, the DOT keyboard has some keys that typewriters do not. Notice the numeric keypad with 18 keys to the right of the normal keyboard. These keys enable you to use your DOT as a calculator.

The number keys on the numeric keypad also appear on the standard keyboard; they are duplicated in the separate keypad for your convenience. If you are accustomed to using a calculator or are working with a lot of figures, this keypad can make your computing tasks much faster and easier.

Above the main keyboard are keys labeled F1 through F10. These "function keys" provide shortcuts for performing predefined tasks with your DOT. The purpose of these keys can vary according to your needs.

The following keys work just like the keys on a typewriter:

[SHIFT]—Press the **[SHIFT]** key to type capital letters, punctuation, and special symbols that appear on the upper part of the keycaps on your keyboard.

[CAPS LOCK]—When you press the **[CAPS LOCK]** key, its red dot illuminates and each letter key you press appears in uppercase. This feature is handy for typing a lot of text in uppercase letters. Unlike the **[SHIFT]** key, the **[CAPS LOCK]** key does not produce special punctuation and symbols. You must still press the **[SHIFT]** key for these characters. To resume typing in lowercase, press the **[CAPS LOCK]** key again.

[TAB]—Use the **[TAB]** key to indent a specified number of spaces with a single keystroke. The purpose of this key can vary according to your needs.

The following keys serve special purposes on your DOT:

[CTRL]—You use the **[CTRL]** (control) key in conjunction with other keys to perform special functions with the DOT. Used alone, the **[CTRL]** key has no effect. You will learn about some uses for this key in later sections.

[ESC]—The function of the **[ESC]** key depends on your application.

[ALT]—The function of the **[ALT]** (alternate shift) key depends on your application.

[BACK SPACE]—The **[BACK SPACE]** key is useful when you make a typing error. If you type an incorrect character on a line

and have not yet pressed **[RETN]**, you can press the **[BACK SPACE]** key to back over and erase characters.

[LINE FEED]—The **[LINE FEED]** key, used with the **[SHIFT]** key, advances the paper to the next line for printing.

[RETN]—The **[RETN]** (return) key enters the line of information you just typed into the DOT's working memory and advances the cursor to the beginning of the next line.

[DEL]—The function of the **[DEL]** key depends on your application.

Arrow keys—In some applications, you can move the cursor by using the arrow keys on the numeric keypad. Each time you press an arrow key, the cursor moves one position in the direction of the arrow. If you hold down an arrow key, the cursor moves rapidly in the indicated direction.

[HOME]—In some applications, this key returns the cursor to the upper left position on the screen.

[PRT SCRN]—By pressing the **[SHIFT]** key on the left or right side of the keyboard and the **[PRT SCRN]** (print screen) key on the upper right side of the keyboard, you can print a copy of the text the screen is displaying.

[NUM LOCK]—Press the **[NUM LOCK]** key to make the numeric keypad operable. To return the numeric keypad keys to nonnumeric operation, such as when using arrow keys for moving the cursor, press the **[NUM LOCK]** key again.

[SCROL LOCK]—Use the **[SCROL LOCK]** key to stop the scrolling action (or "flipping" through the pages) on the screen. After you have examined the contents of the screen, press the **[SCROL LOCK]** key to continue scrolling.

P and **N**—Hold down **[CTRL]** and press **P** to print each character as you type at the keyboard. Hold down **[CRTL]** while you press **N** to stop printing what you type.

C—Hold down **[CTRL]** while you press **C** to cancel the task you are currently performing.

S—Hold down **[CTRL]** while you press **S** to stop the scrolling action (or "flipping" through the pages) on the screen. After you have examined the contents of the screen, press any key to continue scrolling.

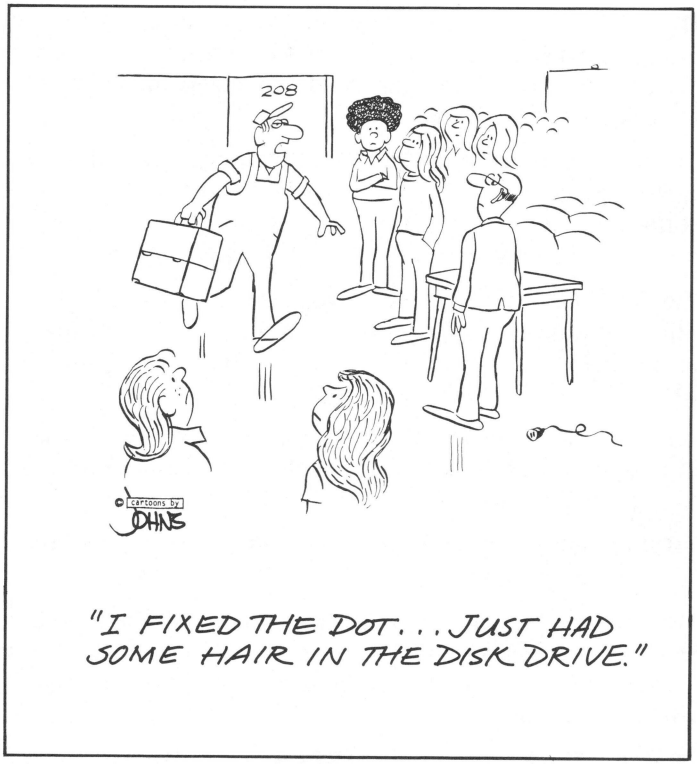
[BREAK]—The function of the **[BREAK]** key depends on your application.

The Printer

Your DOT may come with an optional built-in thermal printer. Power is supplied to the printer when you turn on power to the DOT. A thermal printer uses heat to form an image on specially treated paper. Heat-sensitive chemicals in the paper form the image. A thermal printer requires no ribbon and can print at high speeds very quietly.

Disk Drive(s)

The DOT disk drive(s) are behind the 3½-inch slot(s) located on the right side of the screen. The disk drive(s) work like a record turntable; through a magnetic head (not a needle), they "read" the information contained on small recording disks called diskettes. If your DOT includes two disk drives, the drive on the left side is referred to as drive A. The right-hand drive is drive B.



Diskettes

A DOT diskette is a 3½-inch magnetic recording disk on which you can store and retrieve information (see Figure 1-3). Although the diskette is small and may seem unimportant, your DOT's performance is severely limited without it.

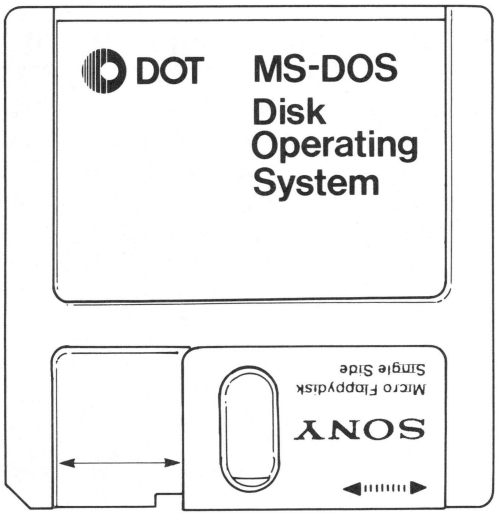


Figure 1-3: DOT Diskette

The diskette is enclosed in a permanent, hard protective cover. A sliding metal "door" on the diskette protects an exposed oval-shaped segment of the diskette. Always open this door before inserting the diskette into the disk drive. When you finish using a diskette, be sure to close the metal door. Then put the diskette into its protective envelope.

Inside the permanent cover is a circular disk that looks like a thin, flexible phonograph record. The diskette also has tiny magnetic tracks, much closer together than those on a record. When the DOT computer stores and retrieves information, the disk drive "reads" these tracks using a magnetic head.

Your DOT computer comes with two types of diskettes: a system diskette and several blank diskettes on which you can store information.

The system diskette contains the operating system programs which enable you to communicate with your DOT. You can use the blank diskettes to store copies of existing information or newly created information. (In Section 2, "Starting Up the System", you will learn how to make a copy of your DOT system diskette.)

TURNING THE POWER ON AND OFF

As you face the rear panel of the DOT (see Figure 1-4), you can see the power switch. The power switch is a red rocker switch on the right side. Press the switch in the 1 (one or "on") position to turn on the power. This switch turns on power to all parts of the DOT, including the keyboard, the disk drive(s), the screen, and the optional built-in printer. If your DOT is equipped with a built-in printer, the printer makes some noises as it resets itself.

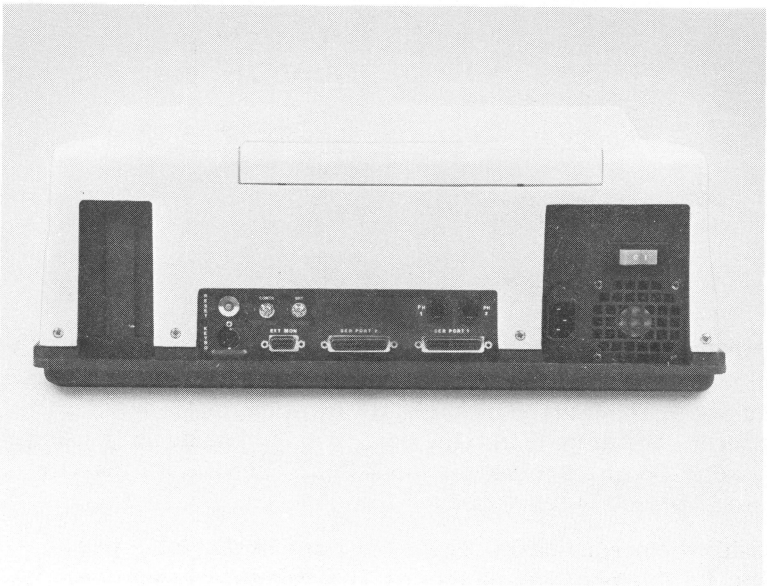
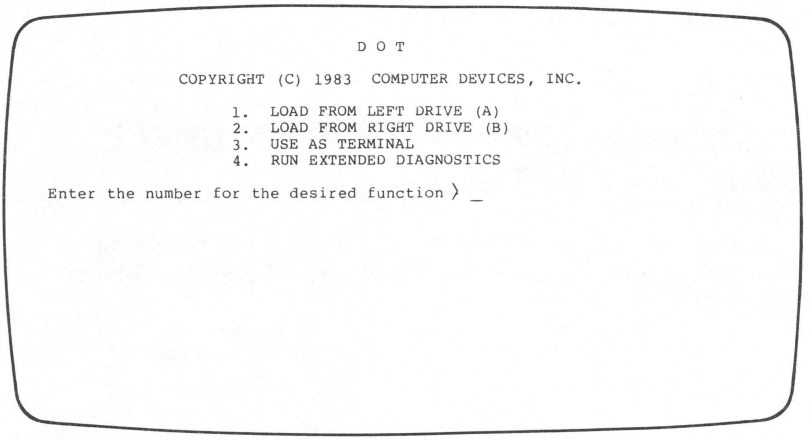


Figure 1-4: Rear Panel of the DOT

When you put the power switch in the 1 (one or "on") position, the DOT displays the following start-up message on the screen:


D O T
COPYRIGHT (C) 1983 COMPUTER DEVICES, INC.
1. LOAD FROM LEFT DRIVE (A)
2. LOAD FROM RIGHT DRIVE (B)
3. USE AS TERMINAL
4. RUN EXTENDED DIAGNOSTICS
Enter the number for the desired function) _

Notice the blinking underscore at the end of the message. This underscore is called a cursor. The cursor indicates your current typing position. As you type, the cursor advances to show where the next typed character will appear.

Section 2, "Starting Up the System", explains how to start typing information into your DOT.

When you are finished using the DOT, place the power switch in the 0 (zero or "off") position to turn the power off.

UNDERSTANDING POWER-UP DIAGNOSTIC MESSAGES

When you turn on the power to your DOT, there is a small possibility that one of the following messages might appear:

DYNAMIC RAM ERR
VIDEO RAM ERR
ERR IN ROM #
CONFIG RAM ERR
INT (8259) ERR
SYSTEM TIMER ERR
KEYBOARD ERR
DISK CONTROLLER ERR
PARITY ERR
POWERFAIL INTR

If the screen repeatedly displays one of these messages when you start up the DOT, call your Computer Devices customer service representative. You cannot use your DOT until the problem is corrected.

LOADING PAPER INTO THE OPTIONAL BUILT-IN PRINTER

The power should be on when you insert a new roll of paper into the optional printer. Refer to Figure 1-5 and follow these steps:

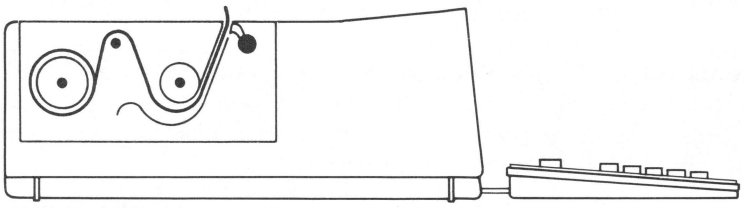


Figure 1-5: Loading Paper

1. Remove the old paper roll, if there is one, by pushing it to the left against the spring-loaded post until the right side comes free.
2. Cut the leading edge of the new roll to get a smooth edge.
3. Place the new roll in the printer so that the paper comes forward from the bottom of the roll.
4. Load the paper by pushing the left side against the spring-loaded post and aligning the right side, like loading a new roll of paper towels.

5. Route the paper forward over the small rod in front of the paper roll until it stops at the two black rubber feed rollers under the black metal plate.
6. Rotate the feed rollers manually until the paper feeds to just below the print head.
7. Hold down the **[SHIFT]** key and press the **[LINE FEED]** key several times until a few inches of paper are exposed.

The printer is ready. To print the contents of the start-up screen which the DOT is displaying, hold down the **[SHIFT]** key, and press the key labeled **[PRT SCRN]** in the upper-right part of the keyboard. The DOT prints the screen contents.

Later, you'll notice that when the DOT starts to run low on paper, a red and blue warning line appears at the right edge of the paper. When the DOT is out of paper, the printer automatically stops printing and the screen displays the following message:

> Out of paper
>
> Please insert a new roll of paper,
> strike any key when ready...

You can load a new roll of paper without turning off your DOT. Then press any key on the keyboard. Your printer continues where it left off when the paper ran out.

INSERTING AND REMOVING DISKETTES

Now that you know the components that make up your DOT and the importance of diskettes, you can practice putting a diskette into the disk drive and preparing the diskette to store information.

Follow the steps below to practice inserting and removing the system diskette into and from the drive:

1. Before inserting the system diskette, turn on the power to your DOT.
2. Remove the diskette from the protective envelope.
3. Slide open the diskette metal door until you hear it click into place.

4. Hold the diskette with your thumb on the front of the label and your fingers on the back as shown in Figure 1-6. The arrow next to the sliding door should point away from you, and the cut corner of the diskette should be at the top.

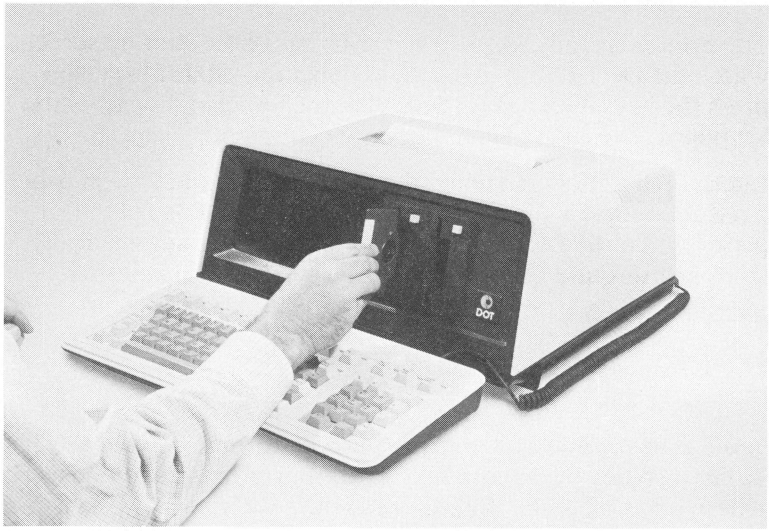


Figure 1-6: Inserting a Diskette

5. Slide the diskette into the disk drive. Push the diskette in until it clicks into place.

6. To remove the diskette from the disk drive, firmly press the tan square button on the drive. If you do not press firmly enough, the diskette slides back into the drive. When you press the button properly, the diskette pops out.

   NOTE: Do not remove the diskette when the red light on the disk drive is illuminated, or you may lose the information that is on your diskette.

7. Close the metal door of the diskette.

Caring for Your Diskettes

Your DOT diskettes are as valuable as the information you store on them. Follow the precautions below to protect your DOT diskettes and to avoid losing stored information:

1. When not using a diskette, always close the metal door which protects the exposed oval part of the diskette.
2. Do not touch the exposed part of the diskette. A small scratch or fingerprint on the diskette surface can destroy information.
3. Keep diskettes away from magnets or objects with magnetic fields such as screwdrivers, paper clips, or power supplies.
4. Keep liquids away from the diskettes.
5. To avoid putting pressure on the diskette, write on one of the sticky labels that come with your diskette before attaching it to the diskette. (To attach a label, peel off the backing and press the label against the side of the diskette with the arrow in the corner.) Make sure the colored portion of the label covers the top ridge of the diskette so you can easily identify the diskette.
6. When finished using diskettes for the day, place them back in their protective envelopes. Store diskettes vertically with the colored part of the label facing up for easy identification.
7. Diskettes operate best within the temperature range of 50° to 125° Fahrenheit (10° to 52° Celsius). Exposing diskettes to higher or lower temperatures may warp or damage them.
8. Make a backup copy of each new diskette you create and each system or program diskette you receive from Computer Devices unless it is marked "copy protected". The procedures for making a backup copy of a diskette are described in Section 3, "DOT Files".

   NOTE: Although you can make a copy of DOT programs to use as a backup, do not makes copies for use on other computer systems. The laws against program copying are now expanding to meet the growing problems of software piracy.

Now that you are familiar with the components of your DOT, you can start up your DOT and begin performing various tasks with it. Section 2, "Starting Up the System", explains how to start using your DOT.

PRIVATE
© cartoons by
JOHNS
" MR. FARNSWORTH, MAY I RUN SOME DATA THROUGH THE COMPANY COMPUTER? I'M HAVING TROUBLE DECIDING WHICH NEW JOB OFFER TO ACCEPT. "

Section 2
STARTING UP THE SYSTEM

Section 2
STARTING UP THE SYSTEM

An operating system controls your DOT. The operating system is an organized collection of programs that translate your instructions so that the DOT can process them. The standard operating system supplied with the DOT is called MS™-DOS.

THE DOT MEMORY

The memory is an important part of the "brain" of your DOT. You don't see the memory, yet you see the results of its operation every time the DOT responds to something you type.

There are two kinds of memory: system memory and working memory. System memory contains the operating system and any program you have placed into the system memory. The system memory holds this information until you turn off the DOT or replace the information. The working memory, like a "scratch pad", is the place where your DOT processes the information you give it.

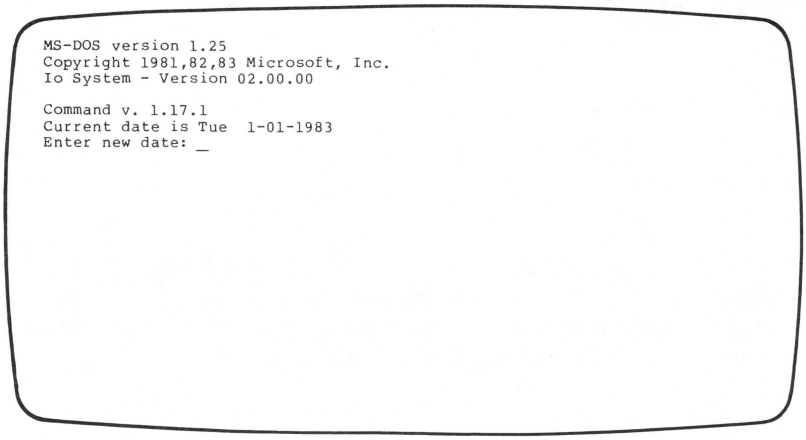
STARTING THE OPERATING SYSTEM

To start up the operating system, you need to move it from the DOT system diskette into memory. This process is called "loading". To load the operating system into the system memory, follow these steps:

1. Turn on the power to the DOT by placing the power switch in the 1 (one or "on") position. The DOT displays the start-up message on the screen.
2. Insert the system diskette into drive A (the left drive).

MS-DOS is a trademark of Microsoft Corporation.

3. Press **1** to load the information from your system diskette to the system memory of the DOT. The DOT displays information similar to the following screen:


MS-DOS version 1.25
Copyright 1981,82,83 Microsoft, Inc.
Io System - Version 02.00.00
Command v. 1.17.1
Current date is Tue 1-01-1983
Enter new date: _

The operating system is now loaded.

ENTERING THE DATE AND TIME

You can now enter the correct date and time. It's a good idea to tell the computer the current date so that the information you work on can be dated. If the DOT displays the correct date, simply press **[RETN].**

To change the date, follow this procedure:

1. Type a number from 1 to 12 to identify the month. (For example, type **1** for January or **2** for February.)
2. Type a hyphen (−) or a slash (/).
3. Type a number from 1 to 31 to identify the day.
4. Type another hyphen or slash.
5. Type the last two digits of the year, from 80 through 99.
6. Last, press **[RETN]**.

The DOT checks the date you type. If the month, day, or year is outside the correct range or the format of the date is incorrect, the DOT "prompts" you with the following message:

Invalid date
Enter new date:_

A prompt is a message from the DOT to inform you that more information is required.

After you enter a valid date (or just press **[RETN]** if the date is correct already), the DOT asks you to specify the time of day. For example:

```
Current time is 0:07:59.00
Enter new time:_
```

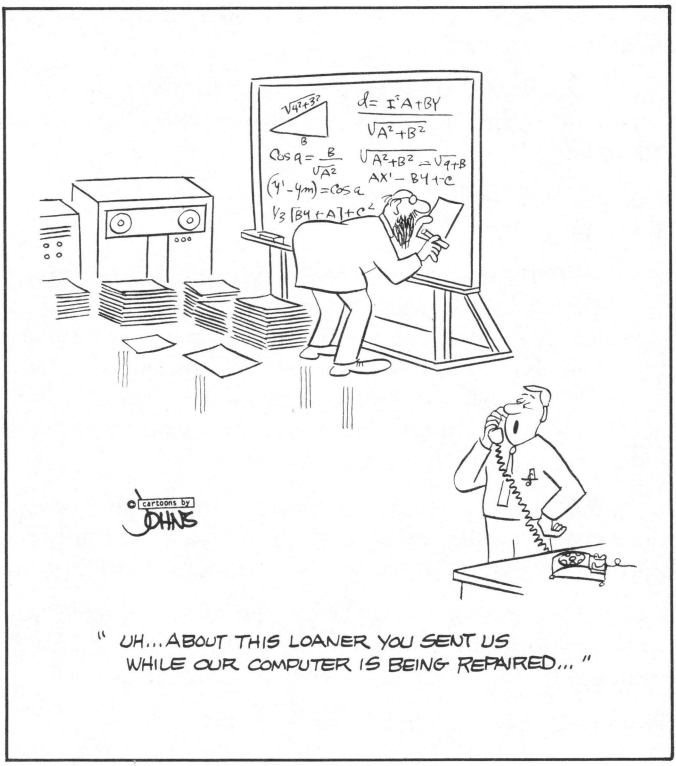
As with the "Enter new date:" prompt, you can bypass this prompt if the time is correct simply by pressing **[RETN]**. The DOT assumed that the time was 0:00:00.00 when you turned on the power. Then the DOT began incrementing the time like a stopwatch. (Note that the DOT clock may have been started in the factory. If so, the time will probably not need resetting. It is a good idea, however, to reset the time each day.)

If you want to reset the time, follow steps 1 through 6 below to enter the hour, minute, and second. If you want to supply only the hour and minute, perform steps 1 through 3, and then step 6.

1. Type a number from 00 to 23 to identify the hour. (The DOT uses a 24-hour clock—for example, 00 means 12 o'clock midnight and 13 means 1 o'clock in the afternoon.)
2. Type a colon (not a hyphen or a slash).
3. Type a number from 00 to 59 to identify the minute.
4. Type a colon.
5. Type a number from 00 to 59 to indicate the second.
6. Press **[RETN]**. The screen displays the A: prompt. At this prompt you can enter instructions into the DOT. The first instruction you need to give the DOT is to make a backup copy of the system diskette, as explained in the following subsection.

MAKING A BACKUP COPY OF THE DOT SYSTEM DISKETTE

Because your DOT has limited use without a diskette to run it, you should be careful not to damage or destroy the information on a diskette.



One of the most important precautions you can take to avoid losing information stored on a diskette is to back up your diskettes. Backing up means making a copy of an original diskette for everyday use. If anything happens to this working copy, you have the original intact and can make another working copy from it. The following procedures explain how to back up your system diskette, using either a one-drive system or a two-drive system.

Making a Backup Copy on a One-Drive DOT

1. Insert your DOT system diskette into the disk drive. If it's already there, don't remove it.
2. Type the following command:

   A:**DISKCOPY [RETN]**

3. The DOT displays the following prompt:

   Insert source diskette in drive A
   Strike any key when ready__

Your DOT system diskette is the "source diskette". Leave it in the drive and press any key. The DOT operating system begins reading the contents of the system diskette.

4. When the operating system has finished reading part of the system diskette, the DOT displays the following message:

   Insert target diskette in drive A
   Strike any key when ready__

   Remove the DOT system diskette and insert a blank diskette (the "target diskette"). (The diskette does not have to be blank; it can be any diskette whose current contents you do not wish to keep.) Press any key to tell the DOT that a diskette is in the disk drive and ready to receive the information from the system diskette.

5. If you insert a new diskette, the following message appears on the screen:

   Formatting while copying...

   This message lets you know that the DOT is formatting your diskette during the copy procedure.

6. After a few seconds, the same message as in step 3 appears:

   Insert source diskette in drive A
   Strike any key when ready__

   This message indicates that the DOT has finished copying part of your source diskette to the target diskette.

7. Keep repeating steps 3 and 4 until the following message appears:

   Copy complete
   Copy another? (Y/N)__

   This message indicates that the DOT has finished copying the entire source diskette to the target diskette.

   Type **N** if you are finished backing up diskettes. The DOT displays the A: prompt.

8. Remove the backup diskette from the drive and label it "System Diskette Working Copy". Store the original DOT system diskette in a safe place. If anything happens to your working copy, use the original system diskette to make another working copy.

Making a Backup Copy on a Two-Drive DOT

1. Insert your DOT system diskette into drive A (the left drive). If it's already there, don't remove it.

2. Type the following command:

   A:**DISKCOPY A: B: [RETN]**

3. The DOT responds with the following message:

   Insert source diskette in drive A
   Insert target diskette in drive B
   Strike any key when ready__

   Your DOT system diskette is the "source diskette". Leave it in drive A. Insert a blank diskette in drive B. (The diskette does not have to be blank; it can be any diskette whose current contents you do not wish to keep.) Press any key to tell the DOT that the diskette is inserted and ready to receive information from the system diskette.

4. When the copying is complete, the DOT displays the following message:

   Copy complete
   Copy another? (Y/N)__

   Type **N**, and the DOT displays the A: prompt.

5. Remove the backup diskette from drive B and label it "System Diskette Working Copy". Remove the original DOT system diskette from drive A and store it in a safe place. If anything happens to your working copy, use the original system diskette to make another working copy.

Section 3
DOT FILES

Section 3
DOT FILES

This section explains how to keep information in organized collections called files.

STORING INFORMATION IN FILES

A file is a collection of information identified by a unique name. You can think of a file as a folder within a filing cabinet. When you need to access the information in a file, you refer to the name of the file containing the information. For example, you might call a file containing a letter to your mother "LETTER.MOM".

There are two kinds of files: system files and user files. System files contain programs supplied with your DOT, such as the operating system program files. These files remain as supplied; you don't change or delete them.

User files, on the other hand, are files you create that can contain text, numbers, graphic information, and programs. You can change the contents of user files at any time.

UNDERSTANDING DIRECTORIES

Each DOT diskette contains a "directory", which is a list of all the files on that diskette. The directory includes pertinent information concerning the size of the files, and the dates and times when they were created or last updated.

To list (display) a directory of your DOT system files, insert your working system diskette into drive A. With the A: prompt displayed, type **DIR** and press **[RETN]**. A list of the files on the diskette in drive A appears on the screen. The following screen shows a sample system diskette directory.

```
A:dir
COMMAND   COM     4847    2-18-83
FORMAT    COM     4203    9-18-82    2:18p
DEBUG     COM     6003    3-05-82
EDLIN     COM     2432    3-05-82
CHKDSK    COM     1720    3-05-82
SYS       COM      605    3-05-82
FILCOM    COM     8320    3-16-82
EXE2BIN   EXE     1280    3-05-82
MBASIC    COM    29184    2-12-82
MODE      COM      512    2-18-83    3:21p
    10 File(s)
```

In the first (left) column of the directory are the names of the files. The second column lists the file name extensions. A file name extension can consist of up to 3 characters. It may provide information about the file contents. By knowing what the file is used for, you can use DOT files more efficiently and safely.

The third column indicates how many "bytes" of space are being used for each file. A byte is a unit of information that your DOT handles; each byte holds approximately one character.

The fourth column shows the date that the file was created or last updated. If you designate a time during the start-up procedures the fifth (far right) column includes the time of day the file was created or last updated.

When you create your own file, the DOT adds the new file name to the file directory.

NAMING FILES

Before you create a file, you need to decide what to name it. You can name a file almost anything you want, provided you observe the following conventions:

1. The file name can be from 1 to 8 characters long.
2. The file name can contain any letter of the alphabet (uppercase and lowercase), any digit from 0 to 9, and the following special characters:

   $ # & @ ! % ( ) - < > ` ^ ~ { } ¦ \'

3. The file name can be followed by an extension of one, two, or three characters. Although you specify a period to separate the extension from the file name, the period does not appear in the directory. The characters in the extension can be any of the characters available for file names.

   For example, your extension can be a number to distinguish different versions of similar files. If your file contains a program, you can use the extension to indicate the programming language in which the program is written.

   Here are some examples of file names:

   81QUOTES.AUG
   STAFFMTG.001
   LETTER.MOM
   LETTER.2

4. The file name cannot be any of these names:

   AUX
   CON
   LST
   PRN
   NUL

These names are reserved for other uses. For more information, see the **MS-DOS Disk Operating System** manual.

CREATING FILES

In the following exercise, you will create a file. Later, you will make changes to this file and perform other file-handling functions.

Follow the start-up procedures described in Section 2, "Starting Up the System". Then create a file named LETTER.MOM by typing the following instruction at the A: prompt:

A: **EDLIN LETTER.MOM [RETN]**

The DOT responds:

```
EDLIN version 1.02
New file
*
```

The asterisk (*) indicates that the DOT Editor is ready to receive your instructions. The editor is a program on the DOT system

diskette that you bring into DOT's memory by typing **EDLIN**. The editor enables you to create and edit files. Any instruction you give to the DOT Editor can be in either uppercase or lowercase characters.

NOTE: If you want the DOT to leave the editor and return to the A: prompt, you simply press **E** and **[RETN]**. For this exercise, the editor program must be in the DOT's memory; that is, the asterisk prompt must be on the screen.

CORRECTING TYPING MISTAKES WHILE ENTERING INFORMATION

As you type information into your new file, you may occasionally make typing errors. There are two simple techniques you can use to correct errors you might make.

Technique 1: Erasing Characters One at a Time

If you decide the last character you typed was incorrect (or the last few characters were incorrect), press the **[BACK SPACE]** key to back up and erase the incorrect character. For example, if you spelled "The" wrong:

Teh

you can press **[BACK SPACE]** two times to back up over the "h" and the "e". Note that the DOT erases these characters from the screen. You can now type the rest of the word correctly. (For this exercise, now press **[BACK SPACE]** three times to erase the "the" completely.)

Technique 2: Erasing the Whole Line and Starting Again

If there are so many mistakes on the line you're typing that it would take too long to correct them using the **[BACK SPACE]** key, you can press **[F6]** to erase the entire line and begin again. For example, assume you typed the following words:

A Paln fo het Alaince

Instead of using **[BACK SPACE]** to back over the mistakes, press **[F6]**. The DOT Editor puts a reverse slash (\) at the end of the incorrect line, indicating that it is ignoring the incorrect line.

The cursor moves to the next line. You can now retype the text correctly.

A plan of the Alliance

(For this exercise, press **[F6]** again so that the editor does not store this line in your new file.)

For more methods of correcting errors, read **Your DOT File Cabinet: File Editing and Housekeeping on the DOT**.

ENTERING INFORMATION INTO A FILE

Now you can enter information into the file named LETTER.MOM.

1. Press **I** and **[RETN]** to instruct the DOT to insert information you type at the keyboard into the file.

2. The DOT responds by displaying the number 1, followed by a colon and an asterisk:

```
* I [RETN]
  1:*___
```

   The number 1 identifies the first line number in the file. Each time you press **[RETN]**, the DOT supplies the next consecutive line number.

3. Type the following sentences, pressing the special keys as shown.

```
1:*Hi mom, [RETN]
2:*[RETN]
3:*This is your favorite (and only) child writing. [RETN]
4:*Everything is fine, I'm happy and healthy, [RETN]
5:*and I don't need money. But guess what. [RETN]
6:*I'm learning to use a computer. [RETN]
7:*That's about it. [RETN]
8:*[RETN]
9:*Love, [RETN]
10:*[RETN]
11:*Veronica [RETN]
12:*[CTRL-C]

*E [RETN]
```

   Pressing **[CTRL-C]** ends the letter. Pressing **E** and **[RETN]** saves the information in a file named LETTER.MOM on the diskette and returns to the A: prompt.

FORMATTING DISKETTES

It's a good idea to save your user files on a diskette separate from the system diskette. Before you can use a blank DOT diskette to hold information, you must format the diskette. Formatting is the way the operating system divides each diskette into concentric rings (tracks) and all tracks into pie-shaped sections (sectors).

Formatting a diskette that already contains information erases the information. To make your DOT editing sessions efficient, you can format several blank diskettes to have on hand.

Note that you do not have to format a diskette when you copy a diskette using the DISKCOPY procedure described in Section 2, "Starting Up the System".

The following procedures describe how to format a blank DOT diskette (or reformat a diskette that already contains information) using either a one-drive system or a two-drive system.

Formatting Diskettes on a One-Drive DOT

1. Make sure that the screen is displaying the A: prompt. If it isn't, follow the start-up procedures described in Section 2.
2. With your DOT system diskette in the disk drive, type the following command:

   A:**FORMAT A:/S [RETN]**

   The screen displays:

   Insert new diskette for drive A:
   and strike any key when ready__
3. Remove the system diskette from the drive and insert a blank diskette. Press any key. The screen displays:

   Formatting...
4. When the formatting is complete, the screen displays some information about the capacity of your diskette and prompts:

   Format another (Y/N)?__

   If you want to format more diskettes, press **Y** and repeat steps 2 and 3. Otherwise, press **N** to return to the A: prompt.

Formatting Diskettes on a Two-Drive DOT

1. Make sure that the screen is displaying the A: prompt. If it isn't, follow the start-up procedures described in Section 2.
2. Make sure the DOT system diskette is in drive A (the left drive). Insert the blank diskette in drive B. Type the following command to indicate that you want to format the diskette in drive B.

   A:**FORMAT B:/S [RETN]**

   The screen displays:

   Insert new diskette for drive B:
   and strike any key when ready__
3. Press any key. (The blank diskette is already in drive B.) The screen displays:

   Formatting...

   After a few minutes, the screen displays the message "System transferred". Your diskette can now store files.

The screen then displays some information about the capacity of your diskette and prompts:

Format another (Y/N)?__

If you want to format more diskettes, press **Y** and repeat steps 2 and 3. Otherwise, press **N** to return to the A: prompt.

COPYING A FILE TO ANOTHER DISKETTE ON A TWO-DRIVE DOT

As already mentioned, it is a good idea to store the files you create on a diskette separate from your system diskette. In the following example, you will copy the file named LETTER.MOM onto the diskette you just formatted. When copying a file to a different diskette, you can give the file either a unique name or the same name. In this example, name the copy NOTE.

1. Make sure the DOT is displaying the A: prompt. Insert the diskette containing LETTER.MOM (your working system diskette) into drive A and the diskette to receive the copy named NOTE into drive B. (Remember that the diskette you use to receive the copy of the file must already be formatted.)

2. Type the following instruction:

   A:**COPY LETTER.MOM B:NOTE [RETN]**

   Note that you do not leave a space between B: and NOTE.

3. When the DOT finishes making the copy, it displays the following information:

   1 File(s) copied
   A:

COPYING A FILE TO ANOTHER DISKETTE ON A ONE-DRIVE DOT

To copy a file to another diskette on a one-drive DOT, follow this procedure:

1. Make sure the DOT is displaying the A: prompt. Insert the diskette containing LETTER.MOM (your working system diskette) into the disk drive.

2. Type the following instruction:

   A:**COPY A:LETTER.MOM B:NOTE [RETN]**

Note that you do not leave a space between B: and NOTE.

3. The DOT reads the file and then prompts:

   Insert diskette for drive B: and strike any key when ready.

   Take the working system diskette out of the disk drive and insert the diskette to receive the copy named NOTE. (Remember that the diskette you use to receive the copy of the file must already be formatted.)

4. Press any key on the keyboard. The DOT copies the file to the new diskette.

   When the DOT finishes making the copy, it displays the following information:

   ```
   1 File(s) copied
   A:
   ```

COPYING A FILE TO THE SAME DISKETTE

You may want to have two copies of a file on a diskette so that you can create a new file based on the contents of the original file while saving the original file. For example, you can save a copy of a report for your records and then update a copy to produce a new report.

To make a copy of the NOTE file you just created, follow these steps:

1. Make sure the DOT is displaying the A: prompt.
2. Put the diskette containing the file NOTE in drive A (or, in a one-drive DOT, the only drive).
3. Choose a name for the new file. Remember to use a unique name. In this exercise, name the copy VERONICA. To be sure that the name you select isn't already in use, check the directory by typing:

   DIR VERONICA [RETN]

   If the system responds with information about a file named VERONICA, the file is already on the diskette and you must choose another name. In this exercise, the DOT responds:

   File not found

   You can continue to copy NOTE into a file named VERONICA.

4. Type:

   COPY NOTE VERONICA [RETN]

   Notice that you type the original file name first, followed by the file name for the new copy.

5. After the DOT makes a copy of NOTE and names it VERONICA, the DOT displays:

   ```
        1 File(s) copied
   A:
   ```

6. To verify that the new file is on the diskette, type:

   DIR VERONICA [RETN]

   The system displays information about the file named VERONICA.

MAKING A BACKUP COPY OF A DISKETTE

You can copy an entire diskette onto either a blank, new diskette or a diskette that contains information you no longer need. When you copy onto a diskette that already has information, you erase everything that existed on that diskette and replace it with the new information.

To copy all the files on a diskette to another diskette, use the DISKCOPY command described in Section 2, "Starting Up the System".

RENAMING A FILE

At times, you may decide to rename a file to a more appropriate name, or to a name that makes a clearer distinction between that file and others. For example, to change the name of the file NOTE to LETTER.MOM, follow these procedures:

1. Make sure that the DOT is displaying the A: prompt and the diskette containing NOTE is in drive A (or, in a one-drive DOT, the only drive).

2. Enter the following information:

   RENAME NOTE LETTER.MOM [RETN]

3. When the DOT has renamed the file, it displays the A: prompt. To verify that the file has been renamed, type:

   DIR LETTER.MOM [RETN]

The DOT displays information about your renamed file.

4. Now type:

   DIR NOTE [RETN]

   Because a file named NOTE no longer exists, the DOT displays:

   File not found
   A:

DELETING A FILE

You may occasionally want to remove a file from your diskette. For example, you may have copied a file, updated the copy, and found you didn't need the original file anymore. You may also need to make more room on a nearly full diskette for more files.

Use extreme care when deleting a file because once the file is gone, you cannot restore it. Unless you have a backup copy, you can only regain the lost information by recreating the file. The procedure below shows how to delete the file named VERONICA. (Remember that you have a copy of this file stored under the name LETTER.MOM.)

1. Make sure the DOT is displaying the A: prompt and that the diskette containing the file named VERONICA is in drive A (or, in a one-drive DOT, the only drive).

2. Type:

   DEL VERONICA [RETN]

3. To verify that the file has been erased, use the DIRECTORY command as follows:

   DIR VERONICA [RETN]

   The DOT displays:

   File not found
   A:

If the file you want to delete has an extension, remember to include a period followed by the extension when typing the file name.

You can also delete all the files on a diskette with one command. To erase an entire diskette you would type **DEL *.* [RETN]**. The DOT prompts for verification:

Are you sure? (Y/N)__

If you respond by pressing **Y**, the DOT deletes all the files on the diskette.

NOTE: When you are comfortable deleting files, you may want to insert the working copy of your system diskette in drive A and delete the original copy of LETTER.MOM that you created earlier in this section. You now have a copy of that file on your second diskette.

DISPLAYING A FILE

With your DOT, you can display the contents of a file on the screen. This feature enables you to review the file contents to see if you want to make changes.

To display the contents of the file named LETTER.MOM, follow these steps:

1. Make sure the DOT is displaying the A: prompt and the diskette containing LETTER.MOM is in drive A (or, in a one-drive DOT, the only drive).

2. Type the following command:

   TYPE LETTER.MOM [RETN]

   The screen displays the contents of LETTER.MOM.

   NOTE: If you display a file that contains more lines than fit on the screen, the DOT scrolls through the file.

   To stop the scrolling action in the middle of the file, press **[CTRL-S]**; then press any key to continue scrolling. You can also press **[SCROL LOCK]** to stop scrolling, then press **[SCROL LOCK]** again to continue scrolling.

PRINTING A FILE

To print the contents of a file, such as LETTER.MOM, you need an optional built-in printer loaded with CDI-approved thermal paper. See Section 1, "Getting Familiar with the DOT", for instructions on loading paper.

To begin printing, make sure the DOT is displaying the A: prompt. Then press **[CTRL-P]**. Now the DOT prints as well as displays on the screen everything you type at the keyboard. Then you type the word **TYPE**, followed by a space and the name of the file you want to print. For example, to print the

contents of LETTER.MOM, enter the following information at the A: prompt:

A:**[CTRL-P] TYPE LETTER.MOM [RETN]**

To stop printing everything you type, press **[CTRL-N]**.

ENDING A DOT SESSION

To turn off your DOT at the end of this practice session, first make sure the A: prompt is displaying on the screen. Otherwise, the DOT will not save the information you are entering into a file. Then simply take the diskette(s) out of the disk drive(s) and place the power switch in the 0 (zero or "off") position.

To return to the original DOT start-up message and not turn off the power, press the **[ALT]** and **[CLR]** keys while holding down the **[CTRL]** key. See "Turning the Power On and Off" in Section 1 for more information.

Section 4
USING DOT BASIC

Section 4
USING DOT BASIC

One of the files on your DOT system diskette is named BASIC. DOT BASIC is an easy-to-use programming language that enables you to perform many useful functions. This section explains how to load and perform calculations with DOT BASIC so you can use your DOT as a calculator.

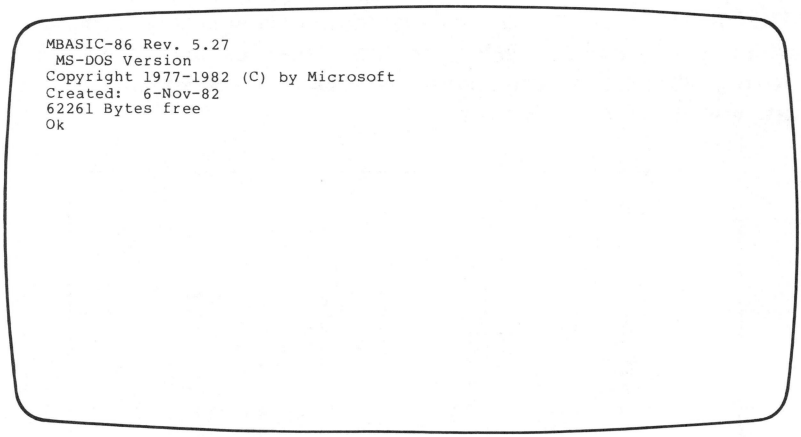
LOADING DOT BASIC

Before you can use your DOT as a calculator, you need to "load" BASIC into your DOT. Loading means placing the information from the file named BASIC into the DOT system memory.

Insert the system diskette into drive A and follow the start-up procedures described in Section 2, "Starting Up the System". With the A: prompt displaying, type:

MBASIC [RETN]

(The M stands for Microsoft, which is the most popular version of BASIC for small computers.) The disk drive makes a humming sound as it loads BASIC. The following information appears on the screen:



You have now loaded the BASIC file information into the DOT's memory.

CORRECTING TYPING MISTAKES IN BASIC

If you make a mistake while entering a calculation, press the **[BACK SPACE]** key to erase errors within the line you are typing, as explained in Section 3, "DOT Files". After you press the **[RETN]** key, BASIC enters that line into the DOT's memory. If you see a mistake in a line after you press **[RETN]**, simply retype the line.

CALCULATING WITH THE NUMERIC KEYPAD

If you have a lot of calculations to perform, you can save time by using the numeric keypad on the right side of the regular keypad. To make the numeric keypad operable, press the **[NUM LOCK]** key. Now pressing keys on the numeric keypad produces numeric characters, rather than moving the cursor.

The only characters you need from the regular keyboard are the question mark, up-arrow (^), asterisk, slash, and parentheses. You will also use the **[RETN]** key. Other punctuation, such as a comma, is invalid and the DOT will not perform your calculations. For example, to add 92,000 to another number, you press the number keys 92000, without a comma.

USING DOT BASIC AS A CALCULATOR

To see how easy it is to use your DOT for calculations, type the following characters:

?3+4 [RETN]

Notice that when you press the **[RETN]** key, DOT BASIC adds 3 and 4, then displays the sum as shown:

```
7
Ok

—
```

The question mark that you typed tells the DOT to display on the screen the information that you requested. If you did not type the question mark at the beginning of your calculation, the DOT would not display the answer. The "Ok" that the DOT displays indicates that the calculation is complete.

Just as your DOT performed addition, as shown in the preceding example, it can also perform subtraction, multiplication, division, and other mathematical computations. The following chart shows how to perform other calculations using DOT BASIC.

The Calculation You Want to Perform	**You Type**	**The DOT Responds**
80220 minus 221	**?80220−221 [RETN]**	79999 Ok —

The Calculation You Want to Perform	You Type	The DOT Responds
365 times 28	**?365*28 [RETN]**	10220 Ok —
3 divided by 22	**?3/22 [RETN]**	.1363636 Ok —
2 plus 3, then multiply the sum by 4	**?(2+3)*4 [RETN]**	20 Ok —
8 plus the product of 4 times 2	**?8+(4*2) [RETN]**	16 Ok —
8 squared	**?8^2 [RETN]**	64 Ok —
2 cubed	**?2^3 [RETN]**	8 Ok —
9 plus the quotient of 6 divided by 3	**?9+(6/3) [RETN]**	11 Ok —
The squared sum of 5 plus 4	**?(5+4)^2 [RETN]**	81 Ok —
18.1 plus 7.8	**?18.1+7.8 [RETN]**	25.9 Ok —

ENDING A DOT BASIC SESSION

When you are through performing calculations using DOT BASIC, type:

SYSTEM [RETN]

The screen displays the A: prompt. You now can continue with other DOT operations.

For more information on using DOT BASIC, see **Business and Fun with BASIC: A Sampler of BASIC Programs for the DOT.**

Section 5
USING OTHER PROGRAMS

Section 5
USING OTHER PROGRAMS

DOT BASIC is just one example of a program you can use with your DOT. You can "run" (operate) other programs that did not come with your DOT, provided they are on compatible diskettes (that is, 3½-inch SONY-format diskettes) and run on the MS-DOS operating system.

SELECTING PROGRAMS

"THIS YEAR I'M GOING TO RELAX AND FORGET ABOUT THE COMPUTER BUSINESS! OPEN ME A BOTTLE OF PROGRAMS."

Selecting the best programs (also called "software" in computer jargon) for your needs can take time and research; there are many programs available, but not all of them are suited to every application. For a complete discussion on choosing appropriate software, read **Software Decisions: The DOT Guide to Software Selection.**

LOADING AND RUNNING PROGRAMS

After you select software, you must load it into the DOT's memory before you can use the program. To load compatible software into your DOT, perform the installation procedures provided with the software. Then follow these steps:

1. At the A: prompt, insert the diskette containing the program into the disk drive (drive A on a two-drive system).
2. Type the name of the program (which should be provided with the program) and press **[RETN]**. For example, if you have a game program called STARBUST, type:

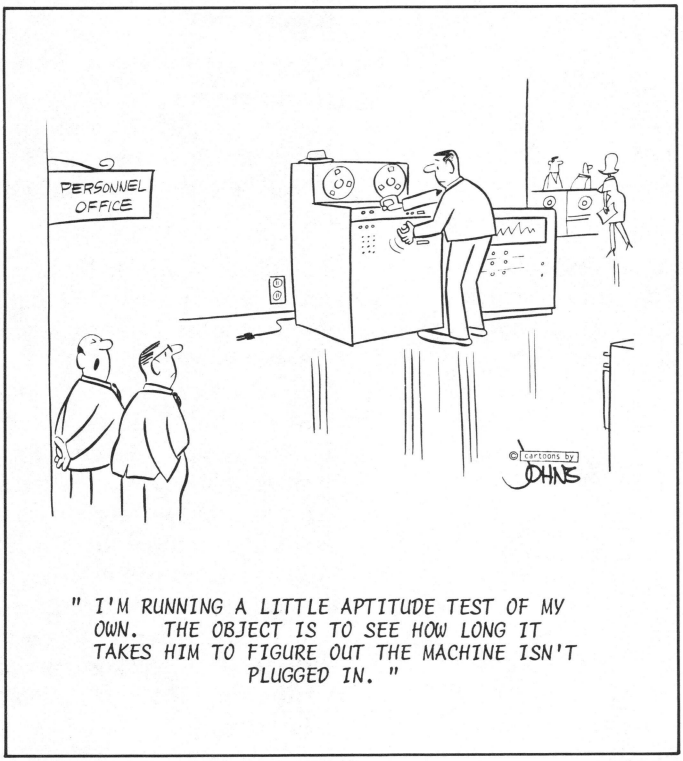
   STARBUST [RETN]

The program is now ready for you to use on your DOT. Simply follow the operating procedures provided with the program.

Section 6
WHAT IF I HAVE A PROBLEM?

Section 6
WHAT IF I HAVE A PROBLEM?

This section provides troubleshooting procedures that you can perform if you have any problems with your DOT.



" I'M RUNNING A LITTLE APTITUDE TEST OF MY OWN. THE OBJECT IS TO SEE HOW LONG IT TAKES HIM TO FIGURE OUT THE MACHINE ISN'T PLUGGED IN. "

TROUBLESHOOTING

Most often, a problem condition can be corrected easily. Before calling your Computer Devices customer service representative, refer to the following table which lists some general problems and possible corrections.

Problem	Correction
The power switch is on, but the screen remains blank.	Make sure the power cord is securely plugged in at both ends. Plug a lamp into the electrical outlet to check that the outlet works.
The printer is printing too light.	Make sure the printer is loaded with the right type of paper. You must use Computer Devices approved thermal paper Type C.
The paper in the printer jams.	Make sure you are using Computer Devices approved thermal paper Type C. If the printer is loaded with the right type of paper, remove the paper and reload it following the procedure described in Section 1, "Getting Familiar With the DOT".
The DOT displays a message indicating that it cannot use or find a diskette.	The diskette you are trying to use is write-protected (that is, you cannot put information on it) or is in the wrong drive. (Note that to write-protect a diskette, break off the notch on the back of the diskette. To write-enable a diskette that you have already write-protected, cover the notch with tape.) If the diskette is write-protected, you need to copy the information on that diskette to another diskette. If the diskette is not write-protected, insert it in the other drive.
The DOT does not respond to your instructions.	Check to see that the keyboard is plugged into the DOT.

Problem	Correction
The DOT frequently displays disk read errors while you are performing operations on files.	The diskette is probably worn. Copy the information onto another diskette, discard the worn diskette, and insert the new diskette. If a new diskette does not solve the problem, the "read" head of the disk drive is probably dirty and needs to be cleaned. (Contact your customer service representative for a cleaning kit.)
While operating, the DOT suddenly returns to the initial start-up screen.	Check that your power source is adequate and not fluctuating.
The information you are expecting to see on the screen is "chopped off" or otherwise incomplete.	Check the SIZE parameter in set-up mode. (Refer to Appendix B, "Set-up Mode Operation", for complete information.)
The cursor does not appear on the screen.	Check the CURSOR parameter in set-up mode. (Refer to Appendix B, "Set-up Mode Operation", for complete information.)
When you *start up* the DOT, the time that the DOT displays after you enter the date is wrong, or the set-up mode screen contains unrecognizable characters. (Refer to Appendix B, "Set-up Mode Operation", for complete information.)	You need to replace the internal battery. Contact your customer service representative for assistance.

WHERE TO CALL FOR HELP

Computer Devices provides service information and operation assistance by telephone. If you have problems with your DOT, call your nearest Computer Devices customer service representative, or call the Computer Devices Customer Service Department toll-free at 1-800-225-1387. In Massachusetts, call 1-617-273-1550 and ask for Customer Service.

Appendix A
GLOSSARY

Appendix A
GLOSSARY

Application program—Software designed for a specific end use, such as accounts payable or word processing.

Aux (auxiliary) ports—See "Serial communications interface".

Backup copy—A copy of a diskette to ensure against loss of valuable programs, text, or data in case of a power failure, a system failure, or an operator error.

BASIC—An acronym for Beginner's All-purpose Symbolic Instruction Code. BASIC is the programming language used with most personal computers.

Baud rate—The speed in bits per second at which the DOT transmits information through the serial communications channels.

Bit—Binary digit, the smallest item of information used by a digital computer such as the DOT. The value of a bit is either one (1) or zero (0).

Byte—The number of bits that a computer processes as a unit. Each byte holds approximately one character.

Command—An instruction that you use to tell the system to do something.

Control sequence—The act of pressing and holding down the key labeled CTRL and then pressing another character.

Current line—The line containing the cursor. The DOT accepts commands only from the current line.

Cursor—A symbol, such as a blinking underscore, that appears on the screen to indicate where the next character you type will appear.

Diagnostic program—Software that detects and isolates hardware malfunctions.

Directory—A listing of file names stored on a particular diskette.

Disk drive—A mechanical device which stores and retrieves information from diskettes.

Diskette—A magnetic recording medium which stores information for fast retrieval.

Disk format—The way the operating system divides each diskette into concentric rings (tracks) and into pie-shaped sections (sectors).

Editing—The process used to create and correct information in files stored on diskettes.

Even parity—A parity bit which is 1 if the total number of ones in the 7-bit character code is odd and 0 if the total is even.

File—A collection of information kept together under a unique name.

File name extension—A suffix for a file name that indicates the nature of the file.

Function keys—Specific keys on the keyboard which enable you to issue one or more special commands with a single keystroke.

GOTO—A BASIC keyword that indicates which line in the program to read next, rather than the next numerical line.

Hardware—The metallic or "hard" components of a microcomputer system in contrast to the "soft" or programming components.

INPUT—A BASIC keyword that prints a question mark on the screen and waits for data from the user. This question mark indicates that the program requires you to enter data before it can continue.

Input data—Information that you enter into a computer for processing.

Keyword—A word in a programming language that defines an operation to be performed.

LIST—A BASIC keyword that displays specified lines of the program on the screen.

LPRINT—A BASIC keyword that directs the output to the printer.

Mark parity—A parity bit that is always set to 1.

Memory—The component of the computer that stores information for immediate use. The system stores less urgent information on diskette until needed.

Menu—A list of alternative actions that the system supplies. You decide what operation the system performs next.

MS-DOS—The operating system which controls the operation of the DOT hardware and performs file maintenance.

Odd parity—A parity bit which is 1 if the total number of ones in the 7-bit character code is even and 0 if the total is odd.

Operating system—An organized collection of programs that translate your instructions so that the DOT can process them.

Parity bit—A bit sent with each character which enables the receiving computer or terminal to detect erroneous characters.

PRINT—A BASIC keyword that produces the output on the screen.

Program—A list of instructions that the computer follows to perform a task.

Prompt—A message from the system which informs you that a particular entry is required.

REM—A BASIC keyword that enables you to enter comments that describe or annotate the program. REM stands for "remark".

Scrolling—"Flipping" through the "pages" of a file, enabling you to see the entire file on the screen.

Serial channel—See "Serial communications interface".

Serial communications interface—A DOT option which enables the DOT to exchange information with an external device (a peripheral device or another computer) which also has a serial interface.

Space parity—A parity bit that is always set to 0.

Standard deviation—The amount of variation in a group of numbers. Standard deviation is also called the root mean square deviation.

Stop bit—A termination bit which signals the end of a character.

System files—Files containing the MS-DOS operating system programs. You must copy these files onto any diskette that contains programs requiring access to MS-DOS.

User files—Files that you create while using a program. For example, a word processing program produces user text files, a spreadsheet program produces user data files, and BASIC produces user program files.

Variable name—An alphanumeric representation of a quantity that can assume any of a given set of values.

Video display unit—The television screen or monitor of a computer or word processor. The video display unit (VDU) is also called the screen or the CRT (cathode ray tube).

Wild card characters—Characters that can replace the actual characters in an original file name. A question mark can replace any single character in a file name and an asterisk can replace an entire group of characters.

Appendix B
SET-UP MODE OPERATION

Appendix B
SET-UP MODE OPERATION

In addition to the file-handling and calculating tasks you have already learned, you may want to perform more advanced operations. This appendix explains some basic computer communications terms, as well as how to use the set-up mode to reset the screen display format and to set up the DOT for communications.

UNDERSTANDING COMMUNICATIONS TERMS

Before you can use the set-up mode, you must be familiar with the following computer communications terms:

serial communications channels (interfaces)
aux ports
bit
parity bit
even parity
odd parity
mark parity
space parity
stop bit
baud rate
XON
XOFF

The *serial communications channels* or interfaces of the DOT (Serial Channel 1 and Serial Channel 2) are also called *aux (auxiliary) ports*. Like the ports in a ship which open to pass air or cargo in and out, the ports in a computer system enable information to transfer between the DOT and other devices.

Your DOT may include two serial communications channels you can use to expand the versatility of your DOT. For example, you can connect your DOT to a letter-quality printer for word processing applications. You can also use a serial communications channel to connect your DOT to other computer systems or to information services such as Dow Jones.

A *bit*, or binary digit, is the smallest item of information used by a digital computer such as the DOT. The value of a bit is either one (1) or zero (0). A serial communications interface operates by sending and receiving collections of bits that represent characters.

The DOT uses the American Standard Code for Information Interchange (called ASCII) to represent characters in bits. Each character in ASCII consists of seven bits (zeros and ones). For example, the ASCII code 0110101 represents the numeral 5. Note that the zeros and ones can combine in 128 ways to represent up to 128 characters in ASCII.

When the DOT transmits characters, it includes more than the seven ASCII bits. A complete transmitted character consists of a start bit, the seven-bit character, an optional parity bit, and one or two stop bits. The start bit signals the beginning of a character.

The optional *parity bit* enables the receiving computer or terminal to detect erroneous characters. There are four types of parity bit: even, odd, mark, and space (called NONE in set-up mode).

When the DOT transmits a character with *even parity*, it adds the number of ones in the character code. If the sum is an even number, the DOT makes the parity bit equal to zero. If the sum is odd, it makes the parity bit equal one. When the DOT transmits a character with *odd parity*, the parity bit is one when the sum of ones in the character code is even and zero when the sum of ones is odd.

Mark parity causes the parity bit always to be one. *Space parity* (or parity NONE) causes the parity bit always to be zero.

The *stop bit* signals the end of a character. Most serial communications devices use one stop bit for each character, but older teletypewriters use two bits. You can select one or two stop bits on the DOT.

The speed at which the DOT transmits information through the serial channels is measured in bits per second and is called the

baud rate. If you have 10 bits per transmitted character (1 start bit, 7 character bits, 1 parity bit, and 1 stop bit), then 300 baud translates to 30 characters per second. On the DOT, you can set the baud rates for transmitting and receiving characters independently, but you usually want them set to the same value.

Two special ASCII characters are *XON* (Transmit On) and *XOFF* (Transmit Off). These characters give the device receiving information from the DOT (the receiving computer, printer, or terminal) a chance to catch up if it falls behind. For example, if the DOT is transmitting information at 480 characters per second but the printer receiving the information can print only 120 characters per second, then the printer will fall behind.

If both the printer and the DOT have XON/XOFF operation turned on, the printer will send an XOFF character to the DOT when it falls behind. When the DOT receives the XOFF character, it stops transmitting information. When the printer catches up, it sends an XON character to tell the DOT that it is ready for more information.

If the DOT has XON/XOFF operation turned off, the DOT will continue transmitting information even when it receives an XOFF character. In this case, some information will be lost between the DOT and the printer.

ENTERING THE SET-UP MODE

To enter the set-up mode, hold down the **[ALT]** key and press the **[ESC]** key. The following information appears:

```
SERIAL CHANNEL 1:
  BAUD_T:       110       BAUD_R:    110       PARITY:    NONE
  BITS:           7       XON/XOFF:  OFF       STOP BITS:    1

SERIAL CHANNEL 2:
  BAUD_T:       110       BAUD_R:    110       PARITY:    NONE
  BITS:           7       XON/XOFF:  OFF       STOP BITS:    1

SCREEN:
  SIZE:       80X16       CURSOR:    UNDLIN    BACKGROUND: NORMAL

EQUIPMENT INSTALLED:
  PRINTERS:       0       AUX PORTS:      0
```

UNDERSTANDING THE SET-UP MODE INFORMATION

The set-up mode screen displays four groups of set-up information. Use the first two groups, labeled Serial Channel 1 and Serial Channel 2, to redefine the operation of the serial communications channels. Use the third group, labeled Screen, to reset the screen display format. The fourth group, labeled Equipment Installed, enables you to redefine the system configuration. The following chart briefly defines the characteristics (or parameters) of the DOT that you can change and lists the options you can choose from.

Parameter	Definition	Options
BAUD_T	BAUD_T specifies the baud rate at which Serial Channel 1 or Serial Channel 2 transmits information.	110 150 300 600 1200 2400 4800 9600
BAUD_R	BAUD_R specifies the baud rate at which Serial Channel 1 or Serial Channel 2 receives information.	110 150 300 600 1200 2400 4800 9600
PARITY	PARITY specifies the form of parity that the serial channel uses when transmitting and receiving information.	EVEN ODD MARK NONE
BITS	BITS specifies whether the complete transmitted character code includes the optional parity bit. Select 8 bits to match devices that expect a parity bit or 7 bits to match devices that do not use a parity bit.	8 7

Parameter	Definition	Options
XON/XOFF	XON/XOFF determines how the DOT responds to the XON and XOFF characters. ON means that the DOT responds to the XON and XOFF characters. OFF means that the DOT ignores the XON and XOFF characters. Note that XON/XOFF should be set to ON when the DOT is transmitting and receiving information at speeds above 1200 baud.	ON OFF
STOP BITS	STOP BITS specifies the number of stop bits used to end each complete transmitted character.	1 2
SIZE	SIZE determines the number of characters per line and the number of lines the DOT displays on the screen. You can choose 80 or 132 characters per line and 16 or 25 lines per screen.	80x16 80x25 132x16 132x25
CURSOR	CURSOR selects the type of cursor that indicates the next typing position on the screen. You can select an underline cursor (UNDLIN), a block cursor (BLOCK), or no cursor (NONE).	UNDLIN BLOCK NONE
BACKGROUND	BACKGROUND determines the color of the letters and the background that the DOT displays on the screen. You can select either white letters on a black background (NORMAL) or black letters on a white background (REVRSE).	NORMAL REVRSE
PRINTERS	PRINTERS enables you to tell the DOT how many printers you are using. Be sure to reset the number of printers each time you add or remove a printer from the system.	0 1 2 3

Parameter	Definition	Options
AUX PORTS	AUX PORTS tells the DOT how many serial communications channels you are using to operate the system.	0 1 2

MOVING AROUND THE SET-UP MODE SCREEN

After you enter the set-up mode, use the four arrow keys on the numeric keypad to move the cursor from one area of the screen to another. Each time you press an arrow key, the cursor moves to the next set-up parameter in the specified direction. (Remember that the arrow keys do not move the cursor when the keypad is set to perform calculations. If necessary, press **[NUM LOCK]** to return the keypad to nonnumeric operation.)

CHANGING THE SET-UP MODE PARAMETERS

The DOT stores in its memory a list of the options for each parameter. Refer to the column labelled "Options" in the chart earlier in this section for the lists of parameter values. When the cursor is at the parameter you want to change, you press the plus (+) key or minus (−) key to change the option. When you press the plus key, the next option in the list for that parameter replaces the option currently on the screen. When you press the minus key, the previous option in the list for that parameter replaces the option currently on the screen.

When you reach the last option in the list, pressing the plus key displays the first option in the list. Similarly, when you reach the first option in the list, pressing the minus key again makes the last option in the list appear.

NOTE: While you are changing the parameters, you can cancel all the changes you made in the set-up mode by pressing function key **[F2]**. When you press **[F2]**, the DOT returns the parameters to their original settings.

For practice, suppose that you want to use the DOT as a terminal with a computer that communicates at 1200 baud with odd parity. Also suppose that you want the DOT to display 132 characters on each line on the screen.

Follow these steps to set up your DOT for these communications parameters:

1. Enter the set-up mode by holding down the **[ALT]** key and then pressing the **[ESC]** key. The cursor should be blinking at the BAUD_T parameter of the SERIAL CHANNEL 1 group.
2. Press the plus key (+) until the number 1200 appears.
3. Press the right arrow key once to move the cursor to BAUD_R.
4. Press the plus key until the number 1200 appears.
5. Press the right arrow key once to move the cursor to PARITY.
6. Press the plus key until the word ODD appears.
7. Press the down arrow key once to move the cursor to STOP BITS.
8. Press the plus key until the number 1 appears.
9. Press the left arrow key once to move the cursor to XON/XOFF.
10. Press the plus key until the word OFF appears.
11. Press the left arrow key once to move the cursor to BITS.
12. Press the plus key until the number 8 appears.
13. Press the down arrow key three times to move the cursor to the SIZE field of the SCREEN group.
14. Press the plus key until the specification 132X25 appears.
15. Press the right arrow key once and then press the down arrow key once to move the cursor to AUX PORTS.
16. Press the plus key until the number 1 appears. (The DOT uses Serial Channel 1 when operating as a terminal, as explained in Appendix C, "Using the DOT as a Terminal".)

SAVING THE NEW PARAMETERS

When you finish changing the parameters, you press function key **[F7]** to save your selections in the DOT memory. These selections remain as the default parameters until you change them again using the set-up mode.

If you want to save the new parameters you entered in the practice session, press function key **[F7]**. If you want to return to the original settings, press **[F2]**.

USING THE HELP SCREEN

The HELP screen for the set-up mode lists the functions of the 10 keys that you use in the set-up mode. Press function key **[F10]** while you are in the set-up mode to display the HELP screen:

```
SETUP HELP MENU:

KEY:                    FUNCTION:
F2 ..................... RECALL OPERATION
F7 ..................... SAVE OPERATION
F8 ..................... JUMP TO MONITOR ENTRY POINT
F10..................... DISPLAY HELP MENU

UP ARROW                MOVE TO PREVIOUS TOPIC
DOWN ARROW              MOVE TO NEXT TOPIC
RIGHT ARROW             MOVE TO NEXT FIELD
LEFT ARROW              MOVE TO PREVIOUS FIELD
PLUS KEY                DISPLAY NEXT OPTION
MINUS KEY               DISPLAY PREVIOUS OPTION

STRIKE ANY KEY TO RETURN
```

When you are finished reading the HELP screen, press any key to return to the set-up mode screen.

LEAVING THE SET-UP MODE

After saving the new parameters, you can return to normal DOT operation by pressing function key **[F8]**. When you press **[F8]** after changing the screen configuration, the DOT clears the screen and waits for you to press any key. Press any key and the DOT then displays the initial screen as though you just turned on the system. Be sure to press the **[F7]** key before pressing the **[F8]** key, or else the DOT will ignore your new selections and continue using the original parameters.

Appendix C
USING THE DOT AS A TERMINAL

Appendix C
USING THE DOT AS A TERMINAL

Your DOT can serve as a terminal, to send and receive information over a communications channel or another computer system, or to access a large timesharing computer system.

In both of these cases, you need to convert the digital signals from the DOT into the audio signals required for transmission on telephone lines. This conversion is done automatically if the serial channel of the computer that you are connecting to your DOT is compatible with the DOT, and you have the proper connecting cable. If the serial channels of the DOT and the other computer are not compatible, you need a device called a modem.

When you are using the DOT as a terminal, the DOT sends the information you type on the keyboard to the modem (or computer) through the communications port labeled Serial Channel 1.

The computer enables you to see what you type by returning to the DOT the characters that you type. Then the DOT displays the characters on the screen. This system of two-way communication is called full duplex communication.

While using the DOT as a terminal, you can use the DOT's printer to obtain a printed copy of the information displayed on the DOT screen. Simply hold down the **[SHIFT]** key and then press the **[PRT SCRN]** key.

Note that the DOT disk drives and Serial Channel 2 are inoperative while you are using the DOT as a terminal. If you have an additional printer attached to Serial Channel 2, you cannot use it until you again use the DOT as a computer.

ENTERING TERMINAL MODE

First, see Appendix B, "Set-up Mode Operation", for information on how to match the operation of the DOT Serial Channel 1 to the modem or computer system that you are using. Then, at the initial DOT screen, press the **3** key to select the USE AS A TERMINAL option. The DOT enters the terminal mode. You can now use your DOT as a terminal.

EXITING FROM TERMINAL MODE

When you are finished using the DOT as a terminal, press any function key. The DOT exits from the terminal mode and displays the initial DOT screen.

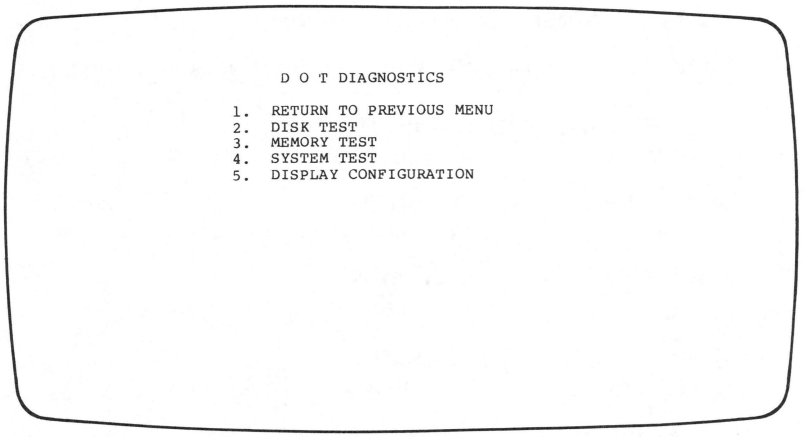
Appendix D
RUNNING THE DIAGNOSTICS

Appendix D
RUNNING THE DIAGNOSTICS

If you suspect that your DOT is malfunctioning, you can use the internal diagnostic programs to test different parts of the DOT. With the diagnostic tests, you can check the operation of the disk drive(s), the screen, and the system memory. The information you obtain from these tests can help the Computer Devices service department diagnose system problems more quickly.

UNDERSTANDING THE DIAGNOSTIC INFORMATION

To display the list of available diagnostic programs, select option 4, RUN EXTENDED DIAGNOSTICS, from the initial DOT screen. The following information appears:



DISK TEST checks the operation of the disk drives. MEMORY TEST checks the system memory. SYSTEM TEST checks the interaction of the microprocessors within the DOT. DISPLAY CONFIGURATION lists the model number and the specifications for your particular DOT.

RUNNING THE TESTS

To select the test you want to run, press the corresponding number on the keyboard. Instructions and diagnostic messages appear on the screen. When you are finished using the tests, press **1** to return to the initial DOT screen.

NOTE: These tests are for Computer Devices customer service representatives to diagnose system problems. You can help your customer service representative by reading the error messages that the DOT displays during these tests.

Disk Test

If you press the **2** key to run DISK TEST, the following message appears:

> Select drive A or B for test
> WARNING: DISK DATA WILL BE DESTROYED.
> Insert a formatted scratch diskette
> in drive A/B and type any key.

After you insert a diskette, the DOT displays the following message:

> Starting disk test, type any key to abort.

Then one or more of the following error messages may appear:

SOFT ERROR ON DISK WRITE:
TRACK#.... SECTOR#.... STATUS =....

HARD ERROR ON DISK WRITE:
TRACK#.... SECTOR#.... STATUS =....

SOFT ERROR ON DISK VERIFY:
TRACK#.... SECTOR#.... STATUS =....

HARD ERROR ON DISK VERIFY:
TRACK#.... SECTOR#.... STATUS =....

DATA ERROR ON DISK VERIFY:
TRACK#.... SECTOR#.... STATUS =....

After completing each pass of the test, the DOT displays the following message:

PASS #.... SOFT ERROR COUNT = ... HARD ERROR COUNT = ...

If the test finds a hard error on a track, the DOT reserves that track for further testing. If the test finds more than 12 bad tracks, the following message appears and the test ends.

Bad diskette or drive, aborting the test.

Check to see if the diskette you are testing is formatted. If the diskette is formatted, try another diskette. If the problem persists, call your customer service representative.

Memory Test

If you press **3** to run MEMORY TEST, the following message appears:

Starting dynamic RAM test, type any key to abort.
System RAM = xxxK

Then the following error message may appear:

— DYNAMIC RAM ERROR AT xxxxx GOOD DATA = xx BAD DATA = xx

After completing each pass of the test, the DOT displays the following message:

PASS #.... ERROR COUNT = ...

If you abort the test, the DOT returns to the initial start-up screen. If the test fails repeatedly, call your customer service representative.

System Test

This test is only for users with DOTs that have the Z80 option installed. If you press **4** to run SYSTEM TEST, the following message appears:

Starting Z80 test, type any key to abort.

During the system test, the DOT displays the following messages:

TESTING SWAP LOGIC
SWAPPING TO Z80
SWAPPING TO 8088
PASS #.... ERROR COUNT = ...

Also, one or more of the following error messages may appear:

Z80 DYNAMIC RAM ERROR
Z80 VIDEO RAM ERROR
Z80 CONFIGURATION RAM ERROR
Z80 MAPPING REGISTER ERROR
Z80 INTERRUPT ERROR: TIMER
Z80 INTERRUPT ERROR: DISK
Z80 INTERRUPT ERROR: KEYBOARD

If the test fails repeatedly, call your customer service representative.

Configuration Display

This test provides information about the configuration of your DOT. If you press **5** to run DISPLAY CONFIGURATION, a message similar to this appears:

MODEL 3000

SYSTEM RAM - xxxK

CONFIGURATION RAM - 2K

DISK DRIVES - 0, 1, 2

ROM# - Rev#
ROM# - Rev#
ROM# - Rev#
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Read this information to your customer service representative.

To help us to provide you with the best manuals possible, please make your comments and suggestions concerning this manual on the form below. Then detach, fold, tape closed and mail to us. All comments and suggestions become the property of Computer Devices, Inc. Your cooperation is greatly appreciated.

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